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| **Project 2.2.4 Project Proposal** |

Introduction

Your team has done a lot of work to find, define, validate, and justify a problem that you want to solve. Most inventors and innovators do not have the time or resources necessary to develop a solution to their problem on their own. Often, it becomes necessary to convince other people or organizations that he has a problem worth solving in order to generate funds to develop a solution to the problem. Typically, investors require a written proposal that defines the problem and provides evidence that the problem is both valid and justified. The proposal should also include information on the proposed plan for developing a solution to the problem and the scope of the work anticipated during the design process.

For this project your team will develop a project proposal to “sell” your project idea to potential investors. The document should be written in a persuasive manner and organized such that all of the information and research is easily understood and clearly supports development of a solution. Your proposal document will be evaluated by your instructor and/or a review panel to assess the thoroughness of your research and the strength of evidence supporting development of a solution. Once the design process is complete this document will be extremely valuable as a means to share your work with experts and mentors that may assist with your team’s project. Further, this documentation will become an important component of your final documentation and will provide much of the material needed to present your final project solution.

Equipment

* Engineering notebook
* Computer
* Previous work related to the problem

Procedure

Create an electronic project proposal document in 8.5 in. x 11 in. format. It should include all sections detailed below and should meet any expectations set forth by your instructor. Beyond that, it is up to your team to ensure that the document is professional and impressive. Keep in mind that the purpose of the proposal is to sell your project idea by demonstrating that you have a valid and justified problem.

Your document should include, at a minimum, the following:

**Title Page**

The title page should include, at a minimum, the title of the project, team member names, and the date.

**Problem Statement & Statement of Purpose**

It may be appropriate to elaborate on your statements in order to properly support them. For example you could include a source for statistics or a map of a geographic location.

Problem Statement: Women’s shoes that have flat, smooth bottoms do not provide any resistance to sticky gum. In 1871, the gum production escalated with the patent of a gum manufacture machine; today, over 374 billion sticks of gum are made yearly, and when not disposed of properly, gum becomes a sticky situation. Women in urban areas have agreed that they hate it when there is gum stuck on their shoes as evidenced by the amount of responses to the online search “I hate it when gum is stuck on my shoe.” Although there are many answers on how to effectively remove the gum from your shoes, there are no solutions on how to keep the gum from sticking to the shoe in the first place.

Statement of Purpose: Provide flat, women’s shoes with a gum resistant material to protect the bottom of the shoe.

**Executive Summary**

The summary is a condensed version of your entire proposal. The summary will contain information that you might mail or email to potential financial supporters or experts. Such individuals could read the executive summary and determine whether they should read your proposal. Be sure to emphasize the importance of what you are doing.

Sticky Situation offers a solution for women with flat, smooth bottom shoes that get gum stuck to them. We provide a more convenient product for the consumer by preventing gum from getting stuck to the shoe.

Our clients are women that have flat, smooth bottom shoes that do not provide any resistance to sticky gum. Sticky Situation offers a product that resolves the problem of gum getting stuck to the shoe when walking. Instead of going through the trouble of buying a product to remove a chewed up gum on a shoe, the consumer will buy a product that resists gum all together.

Across United States billions of people walk ever y day on city sidewalks, airports, parks, ect. In the United States the areas that have the greatest walking rate is in the cities. Our market research has shown that Chicago ranks fourth in the whole country as a city that constantly has people that walk. Gum production has also increased over the years. In 1871, the gum production escalated with the patent of a gum manufacture machine; today, over 374 billion sticks of gum are made yearly, and when not disposed of properly, gum becomes a sticky situation.

While there are currently numerous products that effectively remove the gum from your shoes, there are no solutions on how to keep the gum from sticking to the shoe in the first place.

Sticky Situation’s marketing strategy is to emphasize emphasize a product that resists gum, and reduces money needed to be spent on buying new shoes. Women who walk a lot in the city, for instance, will be very happy when they only have to spend a few dollars on a product that resists gum, and not buy a new pair of shoes.

The product will be provided by our team with the help of sponsors and companies supporting our group. We will offer the best product possible that not only resists gum, but also takes into account other factors such as environmentally friendly, fashionable, and comfortable.

The management of Sticky Situation consists of Bartlett High School Academy of Science, Engineering and High Technology. Bartlett High School Academy provides a relevant curriculum necessary to meet the rigorous demands of a fluid technological society linking challenging mathematics and science courses with quality technical courses.

Based on the size of our market and our defined market area, our available spending money for the first year is no more than $800.

We plan to aggressively build our client base through flyers, and school advertising. Sticky Situation’s product is sure to appeal to any aged women throughout the United States.

**Performance Benchmarks**

If the product or system that your team develops is successful, how will you know? Brainstorm a list of benchmarks, against which you can compare your solution, that represent performance expectations that your solution must meet in order to successfully solve the problem. Benchmarks must be measurable. Sometimes a benchmark is a simple pass or fail assessment. Other times a success rate or percentage of success is the goal.

* Product will be a reasonable amount of money to the consumer.
* Product production will not exceed the amount of $ 800.
* Product will be environmentally friendly.
* Product will be comfortable
* Product will be modern and fashionable.
* Product life-span will last as long as possible for the consumer.
* Product is usable in any given situation or condition.
* Product will effectively resist the piece of gum on the ground.
* Product availability will be easy to access.
* Product production does not exceed the time frame of 4.5 months.
* Product production is in our capability.
* Product will be tested and revised multiple times.

**Math, Science, and Engineering Concepts**

The problem that you choose to solve will certainly require known math, science and/or engineering concepts. This can include formulas, laws, etc. Brainstorm a list of math, science and/or engineering concepts that you anticipate will be needed in order to solve your team’s problem. Consider applications of mathematics, chemistry, biology, physical science, nanotechnology, electrical engineering, mechanical engineering, civil engineering, etc. that may be incorporated into your solution. Input from experts may be helpful in the identification of the concepts needed.

In order to solve the issue of gum sticking to shoes, we need to be well aware of the forces that are at work during this interaction. Some of the forces at work when gum sticks to a shoe is intermolecular bonds. Intermolecular bonds are the forces behind adhesives. Gum has the properties of an adhesive in that it flows enough for the molecules of the gum to catch on to the molecules of the shoe and the gum still retains enough rigidness to keep the two together. This is the basis for all adhesives. So, for us to achieve our goals, we must disrupt one (or both) of these properties. As of right now, we know that lowering the thermal energy of the gum causes it to be less sticky. I am inclined to believe that this stems from keeping the molecules less active. Another more realistic approach would be to make the part of the shoe that comes into contact with the ground out of a material that contains very few spots for the gum molecules to cling to.

**Expert Input and Needs**

Detail the information that you gathered from experts regarding your problem and potential solutions. Also include areas in which you will need additional expert assistance. Be sure to specify the type of expert help for which you anticipate a need and when in the process you will need it.

The completion of the product will eventually require the input of experts to contribute their knowledge to have the best possible solution. Useful information will likely be contributed by material engineers, chemists and designers. The additional help will be highly appreciated with developing materials that are resistant to gum, whether liquid or solid but chemists and material engineers would be able to provide us with information about chemicals that may be tried out and the best ways to make them effective. Designers may aid with the look and comfort of the product and in making sure it is aesthetically pleasing as well as effective. The expert advice will be useful through all stages of the product development, through research and mostly through the production.

**Past and Present Solutions**

Include a summary of your research of similar existing products and/or competitive products including strengths and weaknesses of these products. Also include patents that address a similar problem and that may or may not have made it to development. Justify why you believe there is a need for your solution in the midst of similar work that has been completed.

The research that was conducted did not return any products currently in the market that approach the problem in the same way. All of the current products work to try and prevent gum from ending up on the ground because that is the main problem. If the problem of improperly disposed gum was eliminated, all of these products would not be needed. Therefore, even though such products as gum dispensers and pavement resistant coatings are hardly similar products to our proposed solutions, they all provide competition. If everyone began using the gum dispensers, gum would not be found on the floor and would not be a problem by sticking to shoes. Such existing products include sprays that work in freezing the gum to make it unstuck from the surface. Other products that prevent gum from being on the ground are such like the Gum Target, GummyBins, and portable gum dispensers. Another product that was found in research was Pave Saver. It is a coating for pavement that protects it from gum and other stains. We found it to be a possible idea to look into when considering chemicals and things for our solutions.

**Market Research**

Detail the important aspects of your team’s marketplace study. How can you be reasonably certain that if you solve the problem, a need and/or demand for the solution will exists? Who will buy your product? Why will they bother to try it?

The team’s marketplace study is a combination of first-hand as well as secondary research. The biggest part of getting to know the consumers is coming from our own designed surveys, focus groups, informational surveys and personal observations. To compile a well rounded background of knowledge we also used information found on the web that came from the research of others. The research that we conducted helped justify the existence of our problem.

From articles to artifacts to several methods of gum removal we saw things out there that try to prevent or help solve the problem of gum being stuck on shoes. We believe the need for the product will exist as the problem is very evident especially in cities and people like to take precautions to prevent their shoes from damage such as waterproofing. The target consumers are women who tend to walk a lot and face the problem frequently, but we hope to develop a product that will enlarge our potential consumer range. In regard to why they would even consider trying our product, we first had to do market research. For the success of our product it not only has to be effective as well as well advertised. Once we develop a product that we are able to present to the consumers for use, we will need to consider marketing and advertising strategies.

**Gantt Chart**

Create a Gantt chart to detail all tasks, responsible parties, and due dates. Clearly define the entire scope of work in the task list. Be sure to consider the Rule of Thirds when making scheduling projections.

